NODE=M072

$\psi(4040)$

$I^G(J^{PC}) = 0^-(1^{--})$

$\psi(4040)$ MASS

NODE=M072M

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
4039.6± 4.3	[1] ABLIKIM	08D	BES2	$e^+e^- \to$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •				
4034 ± 6	[2] MO	10	RVUE	$e^+e^- \to$ hadrons
4037 ± 2	[3] SETH	05A	RVUE	$e^+e^- \to$ hadrons
4040 ± 1	[4] SETH	05A	RVUE	$e^+e^- \to$ hadrons
4040 ±10	BRANDELIK	78C	DASP	e^+e^-

NODE=M072M

OCCUR=2

[1] Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = (130 \pm 46)^\circ$. NODE=M072M;LINKAGE=AB

[2] Reanalysis of data presented in BAI 00 and BAI 02C. From a global fit over the center-of-mass energy 3.8-4.8 GeV covering the $\psi(4040)$, $\psi(4160)$ and $\psi(4415)$ resonances and including interference effects. NODE=M072M;LINKAGE=MO

[3] From a fit to Crystal Ball (OSTERHELD 86) data. NODE=M072M;LINKAGE=ST

[4] From a fit to BES (BAI 02C) data. NODE=M072M;LINKAGE=SE

$\psi(4040)$ WIDTH

NODE=M072W

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
84.5±12.3	[5] ABLIKIM	08D	BES2	$e^+e^- \to$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •				
87 ±11	[6] MO	10	RVUE	$e^+e^- \to$ hadrons
85 ±10	[7] SETH	05A	RVUE	$e^+e^- \to$ hadrons
89 ± 6	[8] SETH	05A	RVUE	$e^+e^- \to$ hadrons
52 ±10	BRANDELIK	78C	DASP	e^+e^-

NODE=M072W

OCCUR=2

[5] Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = (130 \pm 46)^\circ$. NODE=M072W;LINKAGE=AB

[6] Reanalysis of data presented in BAI 00 and BAI 02C. From a global fit over the center-of-mass energy 3.8-4.8 GeV covering the $\psi(4040)$, $\psi(4160)$ and $\psi(4415)$ resonances and including interference effects. NODE=M072W;LINKAGE=MO

[7] From a fit to Crystal Ball (OSTERHELD 86) data. NODE=M072W;LINKAGE=ST

[8] From a fit to BES (BAI 02C) data. NODE=M072W;LINKAGE=SE

$\psi(4040)$ DECAY MODES

NODE=M072215;NODE=M072

Due to the complexity of the $c\overline{c}$ threshold region, in this listing, "seen" ("not seen") means that a cross section for the mode in question has been measured at effective $\sqrt{s}$ near this particle's central mass value, more (less) than 2σ above zero, without regard to any peaking behavior in $\sqrt{s}$ or absence thereof. See mode listing(s) for details and references.

NODE=M072

	Mode	Fraction (Γ_i/Γ)	Confidence level	
Γ_1	e^+e^-	$(1.02\pm0.17)\times10^{-5}$		DESIG=5
Γ_2	$D\overline{D}$	seen		DESIG=17;OUR EST;→ UNCHECKED ←
Γ_3	$D^0\overline{D}^0$	seen		DESIG=1
Γ_4	D^+D^-	seen		DESIG=18
Γ_5	$D^*\overline{D}+$ c.c.	seen		DESIG=19;OUR EST;→ UNCHECKED ←
Γ_6	$D^*(2007)^0\overline{D}^0+$ c.c.	seen		DESIG=2
Γ_7	$D^*(2010)^+D^-+$ c.c.	seen		DESIG=20
Γ_8	$D^*\overline{D}^*$	seen		DESIG=21;OUR EST;→ UNCHECKED ←
Γ_9	$D^*(2007)^0\overline{D}^*(2007)^0$	seen		DESIG=3
Γ_{10}	$D^*(2010)^+D^*(2010)^-$	seen		DESIG=22
Γ_{11}	$D\overline{D}\pi$(excl. $D^*\overline{D}$)	not seen		DESIG=23;OUR EST;→ UNCHECKED ←
Γ_{12}	$D^0D^-\pi^+$+c.c. (excl. $D^*(2010)^+D^-$ +c.c.)	not seen		DESIG=24
Γ_{13}	$D\overline{D}^*\pi$(excl. $D^*\overline{D}^*$)	not seen		DESIG=25
Γ_{14}	$D^0\overline{D}^{*-}\pi^+$+c.c. (excl. $D^*(2010)^+D^*(2010)^-$)	seen		DESIG=26

Γ_{15}	$D_s^+ D_s^-$	seen			DESIG=27
Γ_{16}	$\pi^+\pi^+\pi^-\pi^-\pi^0$	seen			DESIG=37;OUR EST;→ UNCHECKED ←
Γ_{17}	$J/\psi(1S)$ hadrons	seen			DESIG=4;OUR EST;→ UNCHECKED ←
Γ_{18}	$J/\psi\pi^+\pi^-$	< 4	$\times 10^{-3}$	90%	DESIG=7
Γ_{19}	$J/\psi\pi^0\pi^0$	< 2	$\times 10^{-3}$	90%	DESIG=8
Γ_{20}	$J/\psi\eta$	(5.2 ± 0.7)	$\times 10^{-3}$		DESIG=9
Γ_{21}	$J/\psi\pi^0$	< 2.8	$\times 10^{-4}$	90%	DESIG=10
Γ_{22}	$J/\psi\pi^+\pi^-\pi^0$	< 2	$\times 10^{-3}$	90%	DESIG=11
Γ_{23}	$\chi_{c1}\gamma$	< 3.4	$\times 10^{-3}$	90%	DESIG=12
Γ_{24}	$\chi_{c2}\gamma$	< 5	$\times 10^{-3}$	90%	DESIG=13
Γ_{25}	$\chi_{c1}\pi^+\pi^-\pi^0$	< 1.1	%	90%	DESIG=14
Γ_{26}	$\chi_{c2}\pi^+\pi^-\pi^0$	< 3.2	%	90%	DESIG=15
Γ_{27}	$h_c(1P)\pi^+\pi^-$	< 3	$\times 10^{-3}$	90%	DESIG=28
Γ_{28}	$\phi\pi^+\pi^-$	< 3	$\times 10^{-3}$	90%	DESIG=16
Γ_{29}	$\Lambda\overline{\Lambda}\pi^+\pi^-$	< 2.9	$\times 10^{-4}$	90%	DESIG=29
Γ_{30}	$\Lambda\overline{\Lambda}\pi^0$	< 9	$\times 10^{-5}$	90%	DESIG=30
Γ_{31}	$\Lambda\overline{\Lambda}\eta$	< 3.0	$\times 10^{-4}$	90%	DESIG=31
Γ_{32}	$\Lambda\overline{\Lambda}$	< 6	$\times 10^{-6}$	90%	DESIG=36
Γ_{33}	$\Sigma^+\overline{\Sigma}^-$	< 1.3	$\times 10^{-4}$	90%	DESIG=32
Γ_{34}	$\Sigma^0\overline{\Sigma}^0$	< 7	$\times 10^{-5}$	90%	DESIG=33
Γ_{35}	$\Xi^+\overline{\Xi}^-$	< 1.6	$\times 10^{-4}$	90%	DESIG=34
Γ_{36}	$\Xi^0\overline{\Xi}^0$	< 1.8	$\times 10^{-4}$	90%	DESIG=35
Γ_{37}	$\Xi^-\overline{\Xi}^+$	< 6	$\times 10^{-5}$	90%	DESIG=38
Γ_{38}	$\mu^+\mu^-$	(9 ± 6)	$\times 10^{-6}$		DESIG=6

$\psi(4040)$ PARTIAL WIDTHS

NODE=M072220

$\Gamma(e^+e^-)$ — Γ_1

NODE=M072W5
NODE=M072W5

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.86±0.07 OUR ESTIMATE				→ UNCHECKED ←
0.83±0.20	[9] ABLIKIM	08D	BES2	$e^+e^- \to$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.6 to 1.4	[10] MO	10	RVUE	$e^+e^- \to$ hadrons
0.88±0.11	[11] SETH	05A	RVUE	$e^+e^- \to$ hadrons
0.91±0.13	[12] SETH	05A	RVUE	$e^+e^- \to$ hadrons
0.75±0.15	BRANDELIK	78C	DASP	e^+e^-

[9] Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = (130 \pm 46)^\circ$. NODE=M072W5;LINKAGE=AB

[10] Reanalysis of data presented in BAI 00 and BAI 02C. From a global fit over the center-of-mass energy 3.8-4.8 GeV covering the $\psi(4040)$, $\psi(4160)$ and $\psi(4415)$ resonances and including interference effects. Four sets of solutions are obtained with the same fit quality, mass and total width, but with different e^+e^- partial widths. We quote only the range of values. NODE=M072W5;LINKAGE=MO

[11] From a fit to Crystal Ball (OSTERHELD 86) data. NODE=M072W5;LINKAGE=ST

[12] From a fit to BES (BAI 02C) data. NODE=M072W5;LINKAGE=SE

$\Gamma(\mu^+\mu^-)$ — Γ_{38}

NODE=M072W2
NODE=M072W2

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.73±0.48±0.12	[13,14] ABLIKIM	20AG	BES3	$e^+e^- \to \mu^+\mu^-$

[13] From a fit to the $e^+e^- \to \mu^+\mu^-$ cross section between 3.8 and 4.6 GeV to the coherent sum of four resonant amplitudes assuming $\Gamma(\mu^+\mu^-) = \Gamma(e^+e^-)$. NODE=M072W2;LINKAGE=A

[14] From solution 1 of 8 with equal fit quality. Other solutions range from $0.58 \pm 0.52 \pm 0.10$ to $0.80 \pm 0.48 \pm 0.13$ keV. NODE=M072W2;LINKAGE=B

$\psi(4040)$ $\Gamma(i) \times \Gamma(e^+e^-)/\Gamma(\text{total})$

NODE=M072235

$\Gamma(J/\psi\eta) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_{20}\Gamma_1/\Gamma$

NODE=M072R00
NODE=M072R00

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.5±0.3	[15] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$
1.4±0.3	[16] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$
7.0±0.6	[17] ABLIKIM	20O	BES3	$e^+e^- \to \eta J/\psi$

[15] Solution 1 of three equivalent fit solutions using three resonant structures. NODE=M072R00;LINKAGE=A

[16] Solution 2 of three equivalent fit solutions using three resonant structures. NODE=M072R00;LINKAGE=B

[17] Solution 3 of three equivalent fit solutions using three resonant structures. NODE=M072R00;LINKAGE=C

$\Gamma(\chi_{c1}\gamma) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{23}\Gamma_1/\Gamma$

NODE=M072G01
NODE=M072G01

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<2.9	90	[18] HAN	15	BELL	10.58 $e^+e^- \to \chi_{c1}\gamma$

[18] Using B($\eta \to \gamma\gamma$) = (39.41 ± 0.21)%.

NODE=M072G01;LINKAGE=A

$\Gamma(\chi_{c2}\gamma) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{24}\Gamma_1/\Gamma$

NODE=M072G02
NODE=M072G02

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<4.6	90	[19] HAN	15	BELL	10.58 $e^+e^- \to \chi_{c2}\gamma$

[19] Using B($\eta \to \gamma\gamma$) = (39.41 ± 0.21)%.

NODE=M072G02;LINKAGE=A

$\Gamma(\Lambda\overline{\Lambda}) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{32}\Gamma_1/\Gamma$

NODE=M072R33
NODE=M072R33

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<5.5 × 10^{-3}	90	[20] ABLIKIM	21AS	BES3	$e^+e^- \to \psi(4040)$

[20] From a measurement of the $e^+e^- \to \Lambda\overline{\Lambda}$ cross section between 3.5 and 4.6 GeV.

NODE=M072R33;LINKAGE=A

$\Gamma(\Xi^-\overline{\Xi}^+) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{37}\Gamma_1/\Gamma$

NODE=M072R35
NODE=M072R35

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<0.0519	90	[21] ABLIKIM	23BK	BES3	$e^+e^- \to \psi(4040)$

[21] From a fit to $e^+e^- \to \Xi^-\overline{\Xi}^+$ cross sections.

NODE=M072R35;LINKAGE=A

$\psi(4040)$ $\Gamma(i) \times \Gamma(e^+e^-)/\Gamma^2(total)$

NODE=M072230

$\Gamma(J/\psi\eta)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{20}/\Gamma \times \Gamma_1/\Gamma$

NODE=M072R25
NODE=M072R25

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
5.1±1.4±1.5	[22] WANG	13B	BELL	$e^+e^- \to J/\psi\eta\gamma$
12.8±2.1±1.9	[23] WANG	13B	BELL	$e^+e^- \to J/\psi\eta\gamma$

OCCUR=2

[22] Solution I of two equivalent solutions in a fit using two interfering resonances. Mass and width fixed at 4039 MeV and 80 MeV, respectively.

NODE=M072R25;LINKAGE=A

[23] Solution II of two equivalent solutions in a fit using two interfering resonances. Mass and width fixed at 4039 MeV and 80 MeV, respectively.

NODE=M072R25;LINKAGE=B

$\psi(4040)$ BRANCHING RATIOS

NODE=M072225

$\Gamma(e^+e^-)/\Gamma_{total}$ — Γ_1/Γ

NODE=M072R4
NODE=M072R4

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
~ 1.0	FELDMAN	77	MRK1	e^+e^-

$\Gamma(D^0\overline{D}^0)/\Gamma_{total}$ — Γ_3/Γ

NODE=M072R14
NODE=M072R14

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AUBERT	09M	BABR	$e^+e^- \to D^0\overline{D}^0\gamma$
seen	CRONIN-HEN..	09	CLEO	$e^+e^- \to D^0\overline{D}^0$
seen	PAKHLOVA	08	BELL	$e^+e^- \to D^0\overline{D}^0\gamma$

$\Gamma(D^+D^-)/\Gamma_{total}$ — Γ_4/Γ

NODE=M072R15
NODE=M072R15

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AUBERT	09M	BABR	$e^+e^- \to D^+D^-\gamma$
seen	CRONIN-HEN..	09	CLEO	$e^+e^- \to D^+D^-$
seen	PAKHLOVA	08	BELL	$e^+e^- \to D^+D^-\gamma$

$\Gamma(D\overline{D})/\Gamma(D^*\overline{D}+c.c.)$ — Γ_2/Γ_5

NODE=M072R12
NODE=M072R12

VALUE	DOCUMENT ID		TECN	COMMENT
0.24±0.05±0.12	AUBERT	09M	BABR	$e^+e^- \to \gamma D^{(*)}\overline{D}$

$\Gamma(D^0\overline{D}^0)/\Gamma(D^*(2007)^0\overline{D}^0+c.c.)$ — Γ_3/Γ_6

NODE=M072R1
NODE=M072R1

VALUE	DOCUMENT ID		TECN	COMMENT
0.05±0.03	[24] GOLDHABER	77	MRK1	e^+e^-

[24] Phase-space factor (p^3) explicitly removed.

NODE=M072R;LINKAGE=P

$\Gamma(D^*(2007)^0\overline{D}^0+c.c.)/\Gamma_{total}$ — Γ_6/Γ

NODE=M072R16
NODE=M072R16

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AUBERT	09M	BABR	$e^+e^- \to D^{*0}\overline{D}^0\gamma$
seen	CRONIN-HEN..	09	CLEO	$e^+e^- \to D^{*0}\overline{D}^0$

$\Gamma(D^*(2010)^+ D^- + c.c.)/\Gamma_{total}$ — Γ_7/Γ

NODE=M072R17
NODE=M072R17

VALUE	DOCUMENT ID		TECN	COMMENT	
seen	[25] ZHUKOVA	18	BELL	$e^+ e^- \to D^{*+} D^- \gamma$	OCCUR=3
seen	AUBERT	09M	BABR	$e^+ e^- \to D^{*+} D^- \gamma$	
seen	CRONIN-HEN..	09	CLEO	$e^+ e^- \to D^{*+} D^-$	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	PAKHLOVA	07	BELL	$e^+ e^- \to D^{*+} D^- \gamma$	

[25] Supersedes PAKHLOVA 07. NODE=M072R17;LINKAGE=C

$\Gamma(D^*(2010)^+ D^- + c.c.)/\Gamma(D^*(2007)^0 \overline{D}^0 + c.c.)$ — Γ_7/Γ_6

NODE=M072R11
NODE=M072R11

VALUE	DOCUMENT ID		TECN	COMMENT
0.95±0.09±0.10	AUBERT	09M	BABR	$e^+ e^- \to \gamma D^* \overline{D}$

$\Gamma(D^* \overline{D}^*)/\Gamma(D^* \overline{D} + c.c.)$ — Γ_8/Γ_5

NODE=M072R13
NODE=M072R13

VALUE	DOCUMENT ID		TECN	COMMENT
0.18±0.14±0.03	AUBERT	09M	BABR	$e^+ e^- \to \gamma D^{(*)} \overline{D}^{(*)}$

$\Gamma(D^*(2007)^0 \overline{D}^*(2007)^0)/\Gamma_{total}$ — Γ_9/Γ

NODE=M072R18
NODE=M072R18

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AUBERT	09M	BABR	$e^+ e^- \to D^{*0} \overline{D}^{*0} \gamma$
seen	CRONIN-HEN..	09	CLEO	$e^+ e^- \to D^{*0} \overline{D}^{*0}$

$\Gamma(D^*(2007)^0 \overline{D}^*(2007)^0)/\Gamma(D^*(2007)^0 \overline{D}^0 + c.c.)$ — Γ_9/Γ_6

NODE=M072R2
NODE=M072R2

VALUE	DOCUMENT ID		TECN	COMMENT
32.0±12.0	[26] GOLDHABER	77	MRK1	$e^+ e^-$

[26] Phase-space factor (p^3) explicitly removed. NODE=M072R2;LINKAGE=P

$\Gamma(D^*(2010)^+ D^*(2010)^-)/\Gamma_{total}$ — Γ_{10}/Γ

NODE=M072R19
NODE=M072R19

VALUE	DOCUMENT ID		TECN	COMMENT	
seen	[27] ZHUKOVA	18	BELL	$e^+ e^- \to D^{*+} D^{*-} \gamma$	OCCUR=2
seen	AUBERT	09M	BABR	$e^+ e^- \to D^{*+} D^{*-} \gamma$	
seen	CRONIN-HEN..	09	CLEO	$e^+ e^- \to D^{*+} D^{*-}$	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	PAKHLOVA	07	BELL	$e^+ e^- \to D^{*+} D^{*-} \gamma$	

[27] Supersedes PAKHLOVA 07. NODE=M072R19;LINKAGE=B

$\Gamma(D^0 D^- \pi^+ + c.c.$ (excl. $D^*(2010)^+ D^- + c.c.))/\Gamma_{total}$ — Γ_{12}/Γ

NODE=M072R20
NODE=M072R20

VALUE	DOCUMENT ID		TECN	COMMENT
not seen	PAKHLOVA	08A	BELL	$e^+ e^- \to D^0 D^- \pi^+ \gamma$

$\Gamma(D \overline{D}^* \pi$ (excl. $D^* \overline{D}^*))/\Gamma_{total}$ — Γ_{13}/Γ

NODE=M072R21
NODE=M072R21

VALUE	DOCUMENT ID		TECN	COMMENT
not seen	CRONIN-HEN..	09	CLEO	$e^+ e^- \to D \overline{D}^* \pi$

$\Gamma(D^0 \overline{D}^{*-} \pi^+ + c.c.$ (excl. $D^*(2010)^+ D^*(2010)^-))/\Gamma_{total}$ — Γ_{14}/Γ

NODE=M072R22
NODE=M072R22

VALUE	DOCUMENT ID		TECN	COMMENT
seen	PAKHLOVA	09	BELL	$e^+ e^- \to D^0 D^{*-} \pi^+ \gamma$

$\Gamma(D_s^+ D_s^-)/\Gamma_{total}$ — Γ_{15}/Γ

NODE=M072R23
NODE=M072R23

VALUE	DOCUMENT ID		TECN	COMMENT
seen	PAKHLOVA	11	BELL	$e^+ e^- \to D_s^+ D_s^- \gamma$
seen	DEL-AMO-SA..	10N	BABR	$e^+ e^- \to D_s^+ D_s^- \gamma$
seen	CRONIN-HEN..	09	CLEO	$e^+ e^- \to D_s^+ D_s^-$

$\Gamma(\pi^+ \pi^+ \pi^- \pi^- \pi^0)/\Gamma_{total}$ — Γ_{16}/Γ

NODE=M072R34
NODE=M072R34

VALUE	DOCUMENT ID		TECN	COMMENT	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$(3.51 \pm 1.89 \pm 1.24) \times 10^{-5}$	[28] ABLIKIM	21AW	BES3	$e^+ e^- \to 2\pi^+ 2\pi^- \pi^0$	
$(2.41 \pm 0.05 \pm 0.79) \times 10^{-2}$	[29] ABLIKIM	21AW	BES3	$e^+ e^- \to 2\pi^+ 2\pi^- \pi^0$	OCCUR=2

[28] Solution 1 of two solutions with equal fit quality. The significance of the $\psi(4040)$ signal is 3.6 σ. NODE=M072R34;LINKAGE=A

[29] Solution 2 of two solutions with equal fit quality. The significance of the $\psi(4040)$ signal is 3.6 σ. NODE=M072R34;LINKAGE=B

$\Gamma(J/\psi\pi^+\pi^-)/\Gamma_{total}$ — Γ_{18}/Γ

NODE=M072R01
NODE=M072R01

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<4	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

$\Gamma(J/\psi\pi^0\pi^0)/\Gamma_{total}$ — Γ_{19}/Γ

NODE=M072R02
NODE=M072R02

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<2	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

$\Gamma(J/\psi\eta)/\Gamma_{total}$ — Γ_{20}/Γ

NODE=M072R03
NODE=M072R03

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
5.2±0.5±0.5		[30] ABLIKIM	12K	BES3	$e^+e^- \to \ell^+\ell^- 2\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<7	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

[30] ABLIKIM 12K measure $\sigma(e^+e^- \to J/\psi\eta) = 32.1 \pm 2.8 \pm 1.3$ pb. They assume the $\eta J/\psi$ fully originates from $\psi(4040)$ decays.

NODE=M072R03;LINKAGE=AB

$\Gamma(J/\psi\pi^0)/\Gamma_{total}$ — Γ_{21}/Γ

NODE=M072R04
NODE=M072R04

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.28	90	[31] ABLIKIM	12K	BES3	$e^+e^- \to \ell^+\ell^- 2\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

[31] ABLIKIM 12K measure $\sigma(e^+e^- \to J/\psi\pi^0)$ <1.6 pb. They assume the $\eta J/\psi$ fully originates from $\psi(4040)$ decays.

NODE=M072R04;LINKAGE=AB

$\Gamma(J/\psi\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{22}/Γ

NODE=M072R05
NODE=M072R05

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<2	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

$\Gamma(\chi_{c1}\gamma)/\Gamma_{total}$ — Γ_{23}/Γ

NODE=M072R06
NODE=M072R06

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<11	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

$\Gamma(\chi_{c2}\gamma)/\Gamma_{total}$ — Γ_{24}/Γ

NODE=M072R07
NODE=M072R07

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<17	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

$\Gamma(\chi_{c1}\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{25}/Γ

NODE=M072R08
NODE=M072R08

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<11	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

$\Gamma(\chi_{c2}\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{26}/Γ

NODE=M072R09
NODE=M072R09

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<32	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

$\Gamma(h_c(1P)\pi^+\pi^-)/\Gamma_{total}$ — Γ_{27}/Γ

NODE=M072R24
NODE=M072R24

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<3	90	[32] PEDLAR	11	CLEO	$e^+e^- \to h_c(1P)\pi^+\pi^-$

[32] From several values of $\sqrt{s}$ near the peak of the $\psi(4040)$, PEDLAR 11 measures $\sigma(e^+e^- \to h_c(1P)\pi^+\pi^-) = 1.0 \pm 8.0 \pm 5.4 \pm 0.2$ pb, where the errors are statistical, systematic, and due to uncertainty in $B(\psi(2S) \to \pi^0 h_c(1P))$, respectively.

NODE=M072R24;LINKAGE=PE

$\Gamma(\phi\pi^+\pi^-)/\Gamma_{total}$ — Γ_{28}/Γ

NODE=M072R10
NODE=M072R10

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<3	90	COAN	06	CLEO	3.97–4.06 $e^+e^- \to$ hadrons

$\Gamma(\Lambda\overline{\Lambda}\pi^+\pi^-)/\Gamma_{total}$ — Γ_{29}/Γ

NODE=M072R26
NODE=M072R26

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<2.9	90	[33] ABLIKIM	13Q	BES3	$e^+e^- \to \psi(4040)$

[33] Assuming that interference effects between resonance and continuum can be neglected.

NODE=M072R26;LINKAGE=A

$\Gamma(\Lambda\overline{\Lambda}\pi^0)/\Gamma_{total}$ — Γ_{30}/Γ

NODE=M072R27
NODE=M072R27

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<0.9	90	[34] ABLIKIM	13Q	BES3	$e^+e^- \to \psi(4040)$

[34] Assuming that interference effects between resonance and continuum can be neglected.

NODE=M072R27;LINKAGE=A

$\Gamma(\Lambda\overline{\Lambda}\eta)/\Gamma_{total}$ — Γ_{31}/Γ

NODE=M072R28
NODE=M072R28

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<3.0	90	[35] ABLIKIM	13Q	BES3	$e^+e^- \to \psi(4040)$

[35] Assuming that interference effects between resonance and continuum can be neglected.

NODE=M072R28;LINKAGE=A

$\Gamma(\Sigma^+\overline{\Sigma}^-)/\Gamma_{total}$ — Γ_{33}/Γ

NODE=M072R29
NODE=M072R29

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<1.3	90	[36] ABLIKIM	13Q	BES3	$e^+e^- \to \psi(4040)$

[36] Assuming that interference effects between resonance and continuum can be neglected.

NODE=M072R29;LINKAGE=A

$\Gamma(\Sigma^0\overline{\Sigma}^0)/\Gamma_{total}$ — Γ_{34}/Γ

NODE=M072R30
NODE=M072R30

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<0.7	90	[37] ABLIKIM	13Q	BES3	$e^+e^- \to \psi(4040)$

[37] Assuming that interference effects between resonance and continuum can be neglected.

NODE=M072R30;LINKAGE=A

$\Gamma(\Xi^+\overline{\Xi}^-)/\Gamma_{total}$ — Γ_{35}/Γ

NODE=M072R31
NODE=M072R31

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<1.6	90	[38] ABLIKIM	13Q	BES3	$e^+e^- \to \psi(4040)$

[38] Assuming that interference effects between resonance and continuum can be neglected.

NODE=M072R31;LINKAGE=A

$\Gamma(\Xi^0\overline{\Xi}^0)/\Gamma_{total}$ — Γ_{36}/Γ

NODE=M072R32
NODE=M072R32

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<1.8	90	[39] ABLIKIM	13Q	BES3	$e^+e^- \to \psi(4040)$

[39] Assuming that interference effects between resonance and continuum can be neglected.

NODE=M072R32;LINKAGE=A

$\psi(4040)$ REFERENCES

NODE=M072

ABLIKIM	23BK	JHEP 2311 228	M. Ablikim *et al.*	(BESIII Collab.)	REFID=62437
ABLIKIM	21AS	PR D104 L091104	M. Ablikim *et al.*	(BESIII Collab.)	REFID=61454
ABLIKIM	21AW	PR D104 112009	M. Ablikim *et al.*	(BESIII Collab.)	REFID=61479
ABLIKIM	20AG	PR D102 112009	M. Ablikim *et al.*	(BESIII Collab.)	REFID=60744
ABLIKIM	20O	PR D102 031101	M. Ablikim *et al.*	(BESIII Collab.)	REFID=60344
ZHUKOVA	18	PR D97 012002	V. Zhukova *et al.*	(BELLE Collab.)	REFID=58710
HAN	15	PR D92 012011	Y.L. Han *et al.*	(BELLE Collab.)	REFID=56816
ABLIKIM	13Q	PR D87 112011	M. Ablikim *et al.*	(BESIII Collab.)	REFID=55393
WANG	13B	PR D87 051101	X.L. Wang *et al.*	(BELLE Collab.)	REFID=55377
ABLIKIM	12K	PR D86 071101	M. Ablikim *et al.*	(BESIII Collab.)	REFID=54738
PAKHLOVA	11	PR D83 011101	G. Pakhlova *et al.*	(BELLE Collab.)	REFID=53638
PEDLAR	11	PRL 107 041803	T. Pedlar *et al.*	(CLEO Collab.)	REFID=16787
DEL-AMO-SA...	10N	PR D82 052004	P. del Amo Sanchez *et al.*	(BABAR Collab.)	REFID=53532
MO	10	PR D82 077501	X.H. Mo, C.Z. Yuan, P. Wang	(BHEP)	REFID=53540
AUBERT	09M	PR D79 092001	B. Aubert *et al.*	(BABAR Collab.)	REFID=52724
CRONIN-HEN...	09	PR D80 072001	D. Cronin-Hennessy *et al.*	(CLEO Collab.)	REFID=53114
PAKHLOVA	09	PR D80 091101	G. Pakhlova *et al.*	(BELLE Collab.)	REFID=53143
ABLIKIM	08D	PL B660 315	M. Ablikim *et al.*	(BES Collab.)	REFID=52142
PAKHLOVA	08	PR D77 011103	G. Pakhlova *et al.*	(BELLE Collab.)	REFID=52132
PAKHLOVA	08A	PRL 100 062001	G. Pakhlova *et al.*	(BELLE Collab.)	REFID=52134
PAKHLOVA	07	PRL 98 092001	G. Pakhlova *et al.*	(BELLE Collab.)	REFID=51628
COAN	06	PRL 96 162003	T.E. Coan *et al.*	(CLEO Collab.)	REFID=51075
SETH	05A	PR D72 017501	K.K. Seth		REFID=50813
BAI	02C	PRL 88 101802	J.Z. Bai *et al.*	(BES Collab.)	REFID=50506
BAI	00	PRL 84 594	J.Z. Bai *et al.*	(BES Collab.)	REFID=50503
OSTERHELD	86	SLAC-PUB-4160	A. Osterheld *et al.*	(SLAC Crystal Ball Collab.)	REFID=51064
BRANDELIK	78C	PL 76B 361	R. Brandelik *et al.*	(DASP Collab.)	REFID=22232
Also		ZPHY C1 233	R. Brandelik *et al.*	(DASP Collab.)	REFID=22114
FELDMAN	77	PRPL 33C 285	G.J. Feldman, M.L. Perl	(LBL, SLAC)	REFID=22062
GOLDHABER	77	PL 69B 503	G. Goldhaber *et al.*	(Mark I Collab.)	REFID=11434